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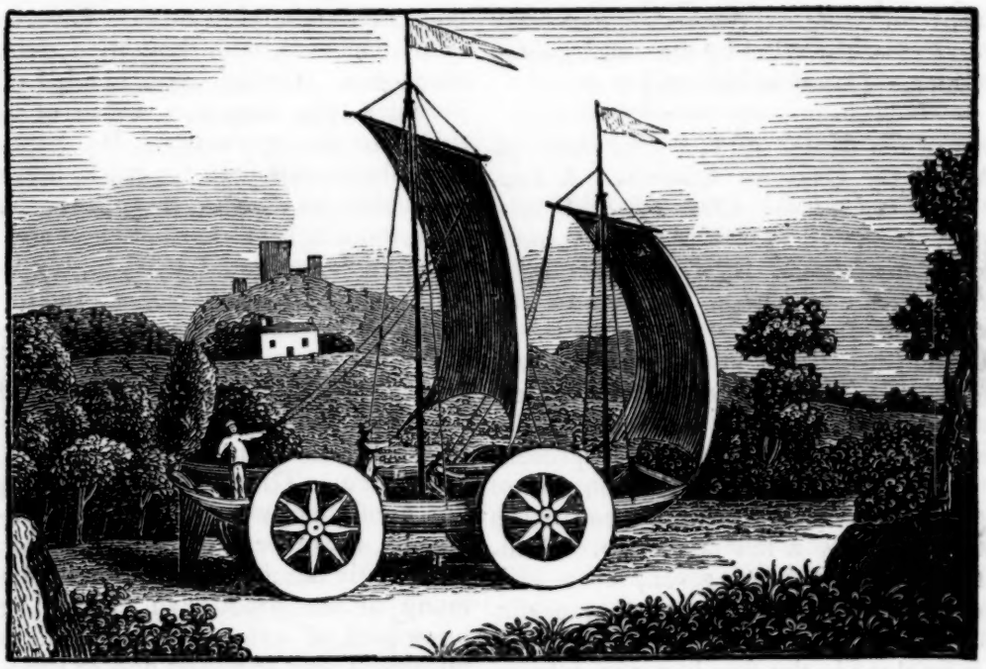
"We live in a world of wonders: things unsearchable and abundantly manifesting the existence of some power, whose range is far beyond our utmost comprehension. If we take but a single circumstance in the history of vegetable life, we find in it business for years, nay, for ages of toil and investigation."—SCIENTIFIC TRACTS.

STEPHINUS' SAILING CHARIOT.



THE SAILING CHARIOT.—It would be almost as difficult to assign limits to human ingenuity and invention, as to human ambition. That there are limits which the one cannot pass, while the other is boundless as the imagination itself, will not be denied; but the scientific discoveries of the last half century must make us hesitate before we say such or such a thing is impossible. In mechanics, in chemistry, and in the ingenious branches of the fine arts, improvements and discoveries have succeeded each other with a rapidity which outstretched all anticipation, and have set all calculations at defiance. No man will now dare say to any of these branches of science, "hitherto shalt thou go and no farther."

To be enabled to make the wind, which "bloweth where it listeth," subservient to the purpose of propelling huge vessels on the ocean, and thus to form an intercourse with the most distant parts of the world, was a great triumph of science; but to be able to steer a vessel with a rapidity that the wind does not generally afford, in a dead calm, or independent, or even against the wind, by steam, is a discovery which would not have been credited a century ago; and other discoveries which were once thought equally improbable have since been made.

The wind, which has been of such good service on the ocean, has for ages been used in machinery on shore, such as the working of mills, &c. Some individuals have, however, thought it might be used to propel vehicles on land. In the last century, Stephinus, of Scheveling, in Holland, constructed a chariot on wheels, to be impelled by the wind, the velocity of which was so great that it would carry eight or ten persons from Scheveling to Putten, a distance of forty-two English miles, in two hours.

Carriages of this kind are said to be frequent in China; and in any wide level country must be sometimes both pleasant and profitable. The great inconvenience attending the machine is, that it can only go in the direction the wind blows, and even not then,

unless it blows strong; so that after you have got some way on your journey, if the wind should fail or change, you must either proceed on foot or stand still.

The Hollanders have small vessels, somewhat of this description, which carry one or two persons on the ice, having a sledge at bottom instead of wheels; and being made in the form of a boat, if the ice break the passengers are secured from drowning.

Our engraving presents a perspective view of Stephinus' Sailing Chariot. The body of it is in the form of a boat; the axletrees are longer, and the wheels further asunder, than in ordinary carriages, in order to prevent its being overturned. The body is driven before the wind by the sails, guided by a rudder.—[London Mirror.]

On some of the Means of elevating the Character of the Working Classes. A Lecture delivered at the Close of the Winter Course, 1833–34, of the Franklin Institute of Philadelphia. By J. K. Mitchell, M. D., Prof. of Chem. Applied to the Arts. Frank. Inst.*

It is not usually in good taste, to come before a class with an apology for an imperfect state of preparation. Circumstances will justify me in so doing, in the present instance, as I now appear before you, not of my *own* accord, but in compliance with a request made only a few days ago. Sufficient time has not been given, even if it were *all* at my disposal, to compose a dissertation worthy of the occasion, much less could it be done in the few hours of release from the calls of a restless profession. Such as it is, however, I present it to you, with the confidence warranted by your invariable kindness to your teachers, that it will not be subjected to the rigorous rules of criticism, but that, even without any explanatory excuse, you would make all necessary allowance for defects, and dwell rather upon the goodness of the intention than upon the imperfections of the execution.

The subject which appears most suited to an occasion like the present, is the mechanic character—the causes of its actual and former condition—and the means of elevating it, so as to place the operative arts on the same platform with professional pursuits. If, in executing this task, I should probe harshly the wounds which I am preparing to heal, I trust that the love of truth, and the desire for improvement hitherto so strongly displayed by this class, will not desert it, at the very time when a full share of both will be necessary to the process of restoration. That I have a very sincere desire to improve and exalt the condition of the working classes, cannot *now*, I should suppose, be doubted by any of you. I have labored long enough, too, among the dust and smoke of a laboratory to feel myself entitled to the appellation of a workman; and while so engaged, have not been able to perceive any necessary connection between manual labor and degradation; any essential disjunction of the work of the hands from that of the head; any law of nature which should make impossible, or even difficult, an alliance of good manners, high morals, and elegant accomplishments, with the active duties of the mechanic. On the other hand, I constantly perceive the immense value of all these things to the workman. He cannot bring superfluous talent to his work, however simple habit may make it appear; he cannot have too much of that patience and self-denial which are found most highly cultivated in the most polished circles; and in his dealings with his customers on the one hand, and his workmen or fellow-laborers on the other, he will unquestionably find educated politeness, and habitual self-possession, the means of wealth, and the sources of affection and obedience. There is no one good quality of the gentleman which can sit ill on the mechanic, however poor he may be; this is abundantly manifested in Philadelphia, where many of the productive classes are found possessed of every gentleman-like accomplishment, and enriched and exalted by them in a way which ought to convince every one of their great importance, even in the promotion of the objects of business, and the accumulation of fortune.

In all simple and in artificial communities, persons skilled in any kind of workmanship were held in high estimation. Even among the celestials, the amusing mythology of the Greeks had placed a working divinity; and Vulcan, though soiled by his profession, and devoted to labor, was not the less a god on that account. Aaron, although the brother of the first of the prophets, seems, in the construction of the golden calf, and of the serpents, to have applied a remarkable degree of mechanical skill. The highly educated, eloquent, logical St. Paul, was trained to the business of a tent maker; and the *Saviour of the World*, who had been apparently carefully educated in the learning of the times, handled the axe and the saw. These, with examples nearer our own time, presented by Franklin, Fulton, Rittenhouse, and many others, show that, in the employ-

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ment of the hands, there is no natural degradation, and that, whatever may be the artificial prejudices now prevalent on this subject, manual professions may be followed consistently with the possession of every noble and every literary qualification; and that the business duties of the mechanic are not to exempt him from the contribution of his share to the literary repute and worth of his country.

That this is not a common opinion is unfortunately true; that it is an unwarrantable opinion is unquestionably false. To show this in the stronger light, let us consider the causes of the present condition of the working classes, and we shall then be better able to indicate the remedies.

During the existence of the feudal system, the working classes were either the slaves or the essential dependents of the owners of the soil. Their vassalage necessarily degraded them. Laboring exclusively for the pleasure or interest of others, they looked upon employment as a task, the *conclusion* of which was alone agreeable, and which could not excite curiosity or bestow satisfaction. In any event, the reward of the toil, if it happened to pass into the hands of the artisan, was insecure, because laws were then made chiefly for the protection and convenience of those who enacted them; and *they* were seldom, if ever, men who could not boast of a long line of ennobled ancestry. A sense of constant dependence—a ceaseless feeling of insecurity—create servile habits, low cunning, and habitual deference towards the sources of power and protection.

Under the most favorable circumstances, the artisan became the resident of some town or city, which had procured from royal bounty, or interest, or policy, certain immunities. But even there the tenor of the times scarcely suffered him to escape from the thraldom incident to his occupation. Either the town was subject to the overshadowing power of some neighboring baron, to whom it paid fealty for the sake of peace or protection; or it was under the control of petty tyrants, the offspring of corporation acts or customs, who lorded it over their fellows with that arrogance and cruelty which we so often see exercised by those who have but recently acquired power and consequence.

Incapable of securing either wealth or station, it was scarcely to be expected that the working classes of that age would covet, or obtain, the advantages of mental cultivation; or that the education of themselves or their children would become an object of much importance. Even if desirable, education, as we now understand the term, was inaccessible to almost all of them. Learning, contradistinguished from science, was the fashion of the age; and, confined chiefly to the monasteries, it was hardly attainable, even by the nobility. But, such as it was, the learning of that period could have been of little use to the artisan in the pursuit or improvement of his profession. Inductive philosophy, the creature of the genius of Bacon, and the great light of the arts in our time, had not yet been born; and science might have sought in vain, amidst the false lustre of the school of subtleties, for one single ray of true practical knowledge. All the influences, therefore, of the times were adverse to the mechanic. There existed no consequence but that of the noble, or the monk; no security, but that of hereditary power; no accumulation, but that by the king or the baron; no education, but that which, inaccessible to the artisan, could not, if attainable, have elevated his intelligence, or illuminated his pursuits. It is not, therefore, so much a matter of surprise, that he sunk into ignorance and degradation, as that, in spite of such sinister influence, he should have been able to sustain so much respectability, and to contribute so much to the advancement of the manual arts.

A pursuit essentially dependent, affording no security for its gains, and unadorned with the lustre of education, is never adopted by any but such as are driven to it by necessity, or inured to it by habit. It is therefore followed, usually, by low and vulgar minds, and is consequently in danger of becoming still more degraded in their hands. It was so with the mechanic arts, and their cultivators, down to that period when a great variety of causes, political, moral, and religious, began to re-act on the monopolists of privilege and power, and brought the people into the possession of a share of both. Among the most influential of these causes was the growth of great towns. As a community becomes more extensive, individuals lose their prominency, and the public is more conspicuous. Units are merged in aggregates; and as the mechanic was lost from sight in the vast mass of human beings, he was left to the less fettered pursuit of his business and his happiness. He was more at ease, and, of course, more industrious. He was surer of his gains, and consequently more eager to embrace all the means of acquisition. He felt that education could be made a source of distinction, and, as it was now attainable, he sought it both for pleasure and profit. A common cause, a general inter-

est, often brought him, for the sake of gain, or the repulsion of invasion, civil and military, into concurrent action with the merchant, the lawyer, and the physician; men who had long before him broken through the barriers of exclusive privilege, and asserted *their* claims to a share of education and refinement. Such association could not fail farther to increase the nominal, as well as real, importance of the mechanic, and to add to his social value, as well as his intellectual culture.

Yet even under the most favorable position assumable in Europe, even now, the mechanic is exposed to the deteriorating agency of many artificial arrangements. Subjected to a long apprenticeship, he must begin his course of manual labor at least as early as thirteen, and is of course debarred from acquiring that kind of education which is to him of the most vital importance—a *philosophical* education. That is not attainable at so early an age. A very great many of the towns of the civilized part of the old world are incorporated so as to exclude, from the exercise of an art, those who have not inherited, or bought its "freedom," even though regularly indented, and legally authorised to practice it elsewhere. Besides, the artificial distinctions in the society of these countries are perpetuated as well by law as custom, and a tradesman there is scarcely yet tolerated in using the dress and the habits of what they call the better classes.

These numerous artificial causes have had the effect of creating a degraded estimate of the value of the mechanical professions, which has travelled across the Atlantic to us, and like many other of the feudal and aristocratical falsities of Europe, has been unfortunately ingrafted into the very substance of society in this country. It is for this reason that some callings are esteemed more genteel than others, which are as intrinsically noble and useful. You well know that the profession of the lawyer or the doctor, though properly speaking unproductive, is esteemed more honorable than that of the mason, the carpenter, or the blacksmith, which is continually promoting the wealth and the power of society.

Thus far, then, the mechanics are not censurable for holding, in the scale of society, a station inferior to that to which, by their wealth, numbers, political consequence, and public usefulness, they should be entitled. But it is not in accordance with the good sense, good feeling, and love of justice, so conspicuous in the American character, to continue the pressure of the odium of a *caste*, unless the people upon whom it weighs, by neglecting the means of escape from it themselves, become voluntary sufferers, and *rivet* the fetters thrown around them by ancient usage and imported prejudice. If, then, the American mechanic is not yet, however truly estimable, rated as he ought to be, the cause will be found, most probably, *in his own hands*.

If we carefully weigh the conditions essential to the honorable reputation of any profession, or class of individuals, they will be found chiefly in the degree of moral cultivation demanded either by usage or by business. For this reason the divine, the lawyer, and the physician, pursue avocations held in the highest respect in every country where they are really learned professions. In these employments the books to be consulted are numerous, and many of them in foreign or dead languages. To the due comprehension of these, a good preliminary education is indispensable. The gentlemen therefore of law, divinity, and medicine, are generally possessed of a considerable degree of classical learning, which, elevating their taste, and refining their sentiments, renders them both agreeable and instructive companions, and makes them welcome, as such, to the best society, of which they become an essential and important part. But to the successful cultivation of most, if not all, of the mechanic arts, a preliminary education, beyond the mere elements of the vernacular language, has unfortunately not been esteemed necessary; and hence, as a class, mechanics have not been noted for those companionable qualities, which, giving zest and grace to society, render their possessor a desirable acquisition. How seldom is a youth, destined for a handicraft business, found passing through the ordinary routine of a college course, or employed in the acquisition of the foreign languages, in which may be found written much which, as an artisan, it would import him to know. The loss thus sustained is of much greater importance than, on a superficial observation, may be made to appear. It is in the gentle breast of tractable childhood, that we must plant the seeds of the tender and delicate sentiments. It is then alone that the mind receives a graceful flexibility, and imbibes a taste for elegant pursuits, and refined sentiments. Our original nature is so rough, selfish, and cold, that it requires years of sentimental cultivation to tutor it into the smoothness, self-denial, and generous warmth, so essential to the harmony, the elegance, and the interest of social intercourse. This is almost instantly perceived by an uneducated man, when brought by the force of circumstances into the presence of those

who have enjoyed the invaluable blessing of a good education. If he is observant, he will be forcibly struck with the charms of good society, and will lament, as thousands have done, that the opportunity of acquiring such things is gone, gone for ever. Although there are men so constituted by nature as to need little polish from the study of the schools and the example of cultivated minds, they are not common; and the fine lines of Pope will be found generally true—

> "'Tis education forms the *common* mind,
> Just as the *twig is bent* the tree's inclined."

When we carefully examine this passage, we are struck with the exception implied by the word "common." Pope, who has written on the ruling passion, knew well, that men of peculiar moral conformation could not be formed by education, but used education for the promotion of favorite pursuits.

Examples of men rising superior to the obstacles of ignorance and poverty into a surprising degree of consequence, are however much more common than those of escape from the contamination of early bad manners, to agreeable ease, and acceptable social elegance. But even such instances, if more common, should not prevent a parent who designs his son for a mechanical pursuit, from giving him, if practicable, a good classical education. Such a course would appear singular at first, but, if generally followed, would cease to attract notice; and the favorable difference in the social consequence of a highly educated mechanic would attract a crowd of imitators; and after no very protracted period, the artificial barrier now left standing between various classes of society would be broken down, and the last relics of our feudal origin and transatlantic prejudices would be extinguished. That, however, must be done by the mechanics themselves. They must cultivate the means of advancement, to be advanced; and cannot rationally complain, if, having deprived their sons of the ordinary accomplishments of good society, they should be kept out of it by a sense of their own inferiority, or the good taste of those who compose it.

It may be said that a mechanic has not *time* for the pursuit of classical and elegant literature, and that, if possessed, it could not promote the interests of his business. There *is* time. If a boy, whose mind has been disciplined by education and whose intellect has been sharpened by exercise in the schools, be finally sent to the study of a trade, he will not only learn it in a shorter time, but he will learn it better, less mechanically, and more intellectually. It will scarcely be denied that as much time is necessary to learn the science of medicine as to acquire a knowledge of any other art whatever; yet we perceive that in three or four years, a clever student of physic possesses himself of an amount of science which would appear incredible to one unused to the acquisitive power of early training, and habitual mental exertion. The preliminary moral *gymnasium* of his classical schools gives such force, flexibility, and retentiveness to his faculties, as to enable him to do in three or four years what, without such preparation, he could not, even if at all possible, accomplish in twice as many.

If such an education were usual with mechanics, it would afford them a new and elegant recreation, without diminishing their zeal for their art. And as their art would, by such means, become itself more respectable, they would not feel themselves degraded in its pursuit. In a solitary road of upper Virginia I was attracted by the appearance of a Yankee pedlar, who, with great enthusiasm, recited verses from a copy of Virgil, descriptive of a scene similar to a very striking one then before him. I naturally inquired into the history of such an individual so engaged. He informed me that his father had given him a good classical and philosophical education, and had brought him up to the business of a tin-smith. At this trade he had worked assiduously for many years, during which he had beguiled his hours of leisure by classical reading. "Virgil, sir," said he, "is my favorite author, and I never go on a journey without him. He is good company. He shortens the way, enlivens an evening, or a rainy day at a tavern, and enables me to bear better the usual adversities of my diversified life. I make my tins myself, harness my horse, load my waggon, and journey now and then to the south to sell them." Here you see that a classical scholar, a man of taste, in fact a cultivated philosopher, was not ashamed to pursue a very common mechanical business, and he did it with skill and attention. It was the custom of his home, familiar to him, and it elevated not only the individual, but the business. *Time* too had been found, not only by him, but by many others in his neighborhood, to educate themselves classically before they entered on a trade. It does not appear that their time was lost, even with reference to their business, since they were quite as skilful in it as those who went to it early, and brought less sharpened understandings to the work.

Even if *money* were the *sole* object of life, the chance of its attainment would not

be lessened by a good preliminary education. But money can be valued properly only as the means of obtaining rational enjoyment. If, then, in a refined education are found new sources of pleasure, new powers of promoting happiness, and respectability, we have one of the best things that money can buy—a good, too, not as easily lost as money, and which, after our youth has gone by, cannot be purchased by the wealth of the world. Bodily activity is so natural to youth, that all young animals are, when awake, in constant motion. It is almost impossible for one of riper years to follow a child through the evolutions of a single day. The little fellow, obedient to impulse, exerts every muscle, stimulates every nerve, trains every member, and every sense, for future use, and happily seldom requires either solicitation or instruction, to prepare himself *physically* for his part in the drama of life. Nor does nature forget to train, at the same time, his moral powers. The acquisition of knowledge made by the time a child reaches the end of its third year is stupendous. But while the muscular education goes on as rapidly as ever, the moral exertion begins from that period to decline, and a less stimulated curiosity exerts over the mental faculties a less active control; and unless a systematic education be substituted for the waning discipline of nature, the mind becomes listless and less enterprising, loses its habitual acuteness, and presents to the observer the man of nature, such as our aboriginal people, active, strong, cunning, incurious, ready for war, for hunting, or the dance, but averse to moral labor, and insusceptible of all the softer and more elevated enjoyments of life.

The want of that cultivation which, by exciting his more tender and graceful sentiments, best fits a man for the society of females, while it steals from him the sweetest and purest enjoyments, deprives those who have a right to expect better things at his hands, of all that delightful intercourse which classical taste and literary refinement can alone produce. Sensible of this, coarse and vulgar men are seldom found, at nightfall, within the precincts of home. Incapable of entering into the feelings, or of participating in the gentle pleasures of domestic life, they are found congregated together in lodges, at taverns, at shows, or theatres, or in any place where they may find refuge from vacuity in strong excitement. Their women are left to themselves; and all of a father which his child can know, is as an eating animal at meal times, and an absentee at night. Such is the result of a want of refined education in any class, or in almost any individual; and if large and very important sections of society voluntarily abstain from such improvement of themselves and their children, although they may occasionally present, as I *know* they do, many very honorable examples to the contrary, yet, as a class, they must suffer loss, both in the means of happiness and the estimation of society.

The neglect of classical education, among those to whom it was formerly deemed an indispensable accomplishment, is among the most alarming signs of a decay in one of the most interesting departments of American civilization. By degrees, merchants and others, engaged in pursuits not immediately dependant on classical learning, have imbibed the opinion, that an acquaintance with elegant literature disqualifies a man for business, and that few of those who have a classical taste or predilection succeed in the active duties of life. It is true, that when a man gives *superior* attention to his amusements of any kind, and postpones his occupation and his interest for his pleasures, he will fall short of success. A theatre—a grog shop—a club—may also trench too much on a man's time and attention, and work his ruin more effectually than Milton or Homer, and that too without leaving him those bright fragments of enjoyment, which, amidst broken fortunes, remain for him who has preserved his innocency and his taste. The objections to learning, like the objections to all that is good in itself, are necessarily derived solely from its abuse, and ought not to militate against its use. In Europe, many of the merchants, whose financial skill has filled the world with their renown, are men of high finish and elegant accomplishments; and in Boston, it is a very common thing to find the student of Greek and Latin classics in the compting-house, there distinguished for the skilfulness of his speculations, and the wealth acquired by his wisdom. With us, unfortunately, the opinion of its hurtfulness leaves us but few opportunities to judge of its value, and unless we soon divest ourselves of this absurd prejudice, we shall not be able to find at home the seminaries in which it will be possible to recover our lost ground. Already they present strong symptoms of decay, and in a few years, unless the working classes will in this, as they do now in many other things, set a noble example to those who have voluntarily divested themselves of the only rational ground of distinction, our colleges and classical schools must entirely disappear. In the city of Philadelphia, there are probably not less than

thirty thousand families. If in each of one third of these families, there exists one young man of a fit age for college, we have at least from five to ten thousand young men qualified by age, at least, to be in the course of education in such an institution. But will it not surprise you when I say, that Philadelphia does not send to all the colleges of the Union a number of young men sufficient, if collected together, to well support one single institution. Since I have been familiar with this subject, there have not been more than one hundred and fifty youths of Philadelphia, at one time, at all the colleges of the Union. Nor has this arisen from a deficiency of skill in the professors, either here or elsewhere. At this moment our own University is rich in the means of instruction, and at a rate which would not tax severely the purse of the poorest master-mechanic; and I *do* trust that, in a very few years, the institution in whose Hall I now address you, will present still cheaper access to elegant, as it now does to scientific education.

Amidst so many things to admire in us and our institutions, even the most friendly foreigner observes with regret our deficiency in elegant literature, and the consequent infrequency of writers of taste. We are free, well informed, industrious, affluent, ingenious; but we are grave, deficient in enthusiasm, and almost wanting in the higher graces of conversation and literature, to which society owes, elsewhere, its greatest charm, and without which we lose much of the sweetest enjoyments of life. Much as I love my home, greatly as on the whole I prefer this, my native land, to every other, and I have seen them nearly all, still, knowing as I do the great enjoyment to be found in that society where the mind of almost every one is refined by acquaintance with the polite writers of every age and country, I cannot resist the feeling of regret at the loss we voluntarily incur, nor can I refrain from expressing the hope, that the time is not far distant, when high refinement and manual labor will not be found incompatible, and when *our mechanics* will be entitled, *in the very best sense of the word*, to the name of *gentlemen*. Coarseness and vulgarity are disgusting, even to the vulgar, for there is no man, however gross himself, who does not feel pleased at the improved manners and literary attainments of his son; just as there scarcely ever existed a drunkard who did not love to see his child averse to the destructive vice to which he had himself become the victim.

Highly as we may estimate classical education, as a means for the advancement of the happiness, the worth, and the companionableness of the mechanic, there is another department of learning still more essential to his professional interests. Science, as contradistinguished from learning, enters into every, even the humblest and simplest mechanical occupation. Not to mention those trades in which it is obviously applicable, such as instrument making, clock making, machine making, &c., men engaged in leather dressing, dyeing, tanning, fulling, &c. are constantly employing scientific processes, and do this better, or worse, with more or less prospect of inventive or judicious results, according to the greater or less familiarity with their principles.

That mechanics have not closely studied philosophy is attributable chiefly to the thraldom of prejudice, and the disabilities which, created in feudal times, are not yet removed, even in our own age and country. In other countries, and at a more remote period, philosophy was the privilege of but a few, to whom hereditary wealth, or professional necessity, brought the boon. *Experimental* philosophy, at least, was taught in but a few expensive seats of learning, to which scarcely any one but a member of the hereditary aristocracy could find access on any terms. It was then impossible for a boy, devoted by his pursuits to any manual occupation, to obtain admittance to such places of instruction, and, if possible, the enormous expense operated as a preventive; for if that could be afforded, the then profits of the anticipated trade would have rendered it inexpedient. That which was, in former ages, a necessary ignorance, became, as it were, a badge of degradation, and illiteracy and labor were so commonly united as to be esteemed inseparable.

So hurtful is this evil, in the eyes of some of the greatest men now alive, that they have almost devoted themselves to the duty of enlightening and reforming a class essentially the most important to the interests and welfare of society. Lord Brougham, Dr. Birkbeck, &c. are now laboring hard to make knowledge cheap and accessible, and to persuade the artificers of all kinds to throw off the shackles of the worst description of tyranny, that of professional ignorance and apathy. In this they have succeeded to a very remarkable degree, and while we are boasting of the revolution which gave us the mastery of ourselves, we are submitting, even yet, to the most degrading influence of the mechanical and aristocratic institutions of the country from which we were delivered, and, I fear, permitting the people from whom we separated to outstrip us in that kind of

knowledge which is the true source of individual advancement and national prosperity.

Within a very few years, however, a new spirit begins to pervade the laboring classes of our city, and at length, desirous of advancing to the station long since accorded to them by our national institutions, they seem resolved to prepare themselves for their professions in the same philosophic manner as the divine, the lawyer, or the physician. This is as it should be; for otherwise, it would appear singular to boast of our national independence in language which, itself expressive of ignorance, betrays the lamentable dependence on foreign influences of the basest and most dishonorable character. The time has at length I hope come, when *profession* will be no longer a plea for *ignorance*, or *trade* an excuse for *coarseness* and *rudeness*. Henceforth, a mechanic, ignorant of the principles on which his art is founded, will scarcely be better tolerated than would a physician who should dare to practice his art, when convicted of ignorance of the philosophy of the circulation of the blood. While debarred the schools of science, by the exclusiveness of the aristocrat, or the high price of learning, he might be pardoned for an unavoidable ignorance; but now, when science opens her arms to receive him, and beckons him to her temple, he must enter her honorable courts, or blame himself alone for his exclusion. And if despised by those who have embraced the rejected opportunities, he finds himself lowered on the scale of society, let him remember that, in our country at least, it is impossible to support long any other distinctions than those of talent and learning, and that *he* will be considered most noble who is so indeed, and *he* most agreeable and most welcome, who, by great cultivation, has possessed himself of the affluence of the powers of pleasing. The revolution begun in '76 will not be completed until the artificial barriers of society, instituted in Europe, have been entirely overthrown; and that can be done solely through that cultivation which will render them unnecessary. In Europe, a vulgar and ignorant man may be found among an hereditary aristocracy, and be sustained by the privileges of his class; but here, such distinctions have happily vanished, and such a man will, whatever his wealth or his profession, sink into merited contempt.

I feel greatly encouraged by the zealous and untiring pursuit of knowledge evinced in the class I am now addressing. Every night, regardless of the inclemency of the weather, you have filled this spacious hall to its very walls, and have expressed no impatience at demonstrations necessarily prolonged, and often deficient in direct interest. All this augurs well for the future, and promises us a harvest, of which the good seed will be again sown for future increase. Let the mechanics of one generation be, as they should be, philosophically educated, and, in America at least, such an education will become forever indispensable. You have, therefore, a double incentive to exertion. Your own respectability and interest, and the elevation of the character and pursuits of your successors for all future time, seem to be now in your hands, and, in improving yourselves, you will benefit and exalt your country.

If the magnificent bequest of the late Mr. Girard should be applied as it ought to be, I think the mechanics will receive an impulse from an unexpected quarter. It is now almost certain that the orphan children who are to enter the Girard College will be carefully educated in classical learning, and fundamental philosophy, and will most of them afterwards engage in operative pursuits. They will soon form a numerous body of mechanics of the very best quality, and render an equally good education imperative to others; for be assured, as you may be by the many fine examples already among yourselves, that exactly in proportion to the intelligence and skill of the workman will be his success in business. The doctor may practice unworthily, yet extensively, his hidden art; the merchant may, by good fortune, succeed without education in his adventures abroad and his speculations at home; but the mechanic must, in his less eventful occupation, depend for success on his merit and his skill, and these will be proportionate to his natural and his *cultivated* faculties. His defects, if they exist, cannot be concealed, and his good qualities must be apparent in his productions. These always speak an intelligible language, and are generally of a very obvious character.

Every thing around us which relates to the advancement of the operative arts is of an auspicious character. That is, indeed, amidst the existing tendency to the decline of literature amongst us, a subject of unfeigned exultation, because it is not possible that a general scientific movement on the part of the mechanics should be unaccompanied by an improvement in the education of every other class of society. That part of society which has unfortunately been permitted to monopolize the classical distinctions will not tamely see you transcend them in science, but, entering on a very honorable and profitable competition, brighten themselves

and stimulate you. This is the only warfare which should be conducted by various classes of society among us, and its end should be the triumphant success of all.

It is vain for one section of society, in our country at least, to envy another its superiority or its influence. These follow knowledge and manners as naturally as the brightening of the face of the landscape does the rising of the morning sun of spring. By numbers, a set of educated men may be divested of power, or consequence, but it will only be to put another set of the very same kind in their places, and those who have made the change, if themselves uneducated, will not be benefitted by the alteration. While society maintains the forms of orderly government, such is the case in all free communities. Monarchies and oligarchies present occasional exceptions, and sometimes during the reign of civil commotion, spirits, from the vasty depths of ignorance, rise, through extraordinary force of character, to ephemereal exaltation. Sooner or later, however, the natural tide of events flows on, and those best qualified to guide the councils, and direct the destinies of society, will be found at the helm, though the spontaneous choice, too, of those who have not prepared *themselves* for the station. To obtain a share of power, to become eligible companions, welcome associates, to raise the credit of the class, and wipe off from it the involuntary stains brought from feudal times, and foreign countries, and to remove the badges of mental degradation, voluntarily assumed even here, the mechanics must not waste the time in unavailing regrets, and useless jealousies, but, buckling on the armor of learning, and seizing the sword of science, advance to the combat for an equal station, with that ardor which must conquer, and that knowledge which will make the victory honorable to themselves and glorious to the country—the whole country—and I was going to say, nothing but the country. But, no! no! that will be a victory auspicious to the *world*. So grand a spectacle is seldom seen in the universe. A whole community of mechanics, refined by literature, polished by good society, illuminated by philosophy, enjoying *all* the pleasures and honors of education, and carrying the arts irresistibly forward, to a degree of excellence of which the present age, with all its hurrying progression, sees but the beginning. That cause, once well begun, can have no limits but those of the world,—no overthrow but that which must come to all things, when "*Time* shall be no longer."

So truly honorable a result will throw back great reflective credit on the institutions in which originated the efforts for melioration: and among such institutions, none will probably, in our country, hold a higher rank than the *Franklin Institute of Pennsylvania*. It is but a very few years since a small number of individuals, most of them yet young, conceived the idea of affording, at a cheap rate, the sciences to the working classes, and all others who might be unable to apply to more expensive places of learning. With almost incredible zeal did they collect the funds, and erect, on a lot purchased in a central situation, the noble edifice in which I have now the honor of addressing you. A Board of Managers was elected, a Committee of Instruction appointed, and the best teachers sought for and found. Many of you must remember the zeal and skill with which Doctor Thomas P. Jones conducted the course of experimental philosophy, and practical mechanics; and with how much admirable science Professor Keating combined the power of throwing charms around the processes and the theories of chemistry. Professor Franklin Bache,* who followed him, is yet agreeably remembered for his profound knowledge, exact method, and exemplary precision; for the efforts which he made to call your attention from the striking experiment to its connection with, and illustration of, the great principles of the science. Of the deep research and instructive course of my present fellow-laborer, Professor Johnson†, I could say much which would meet with a ready response from a class which has acquired the title to estimate their merits, and unquestionably is inclined to fully appreciate their great desert. At the call of the government, Mr. Franklin Peale‡ has gone abroad to examine and report on the processes pursued in the mints of other countries, and for the past season we have been deprived of his ingenious, amusing, and instructive lectures. But Doctor Emerson§ and Mr. Millington‖ have filled up his evening by discourses at once improving to you and most creditable to themselves.

It is not alone, however, to the lecture-room, that the merit of the Franklin Institute is confined. Through the aid of the committee on publications, and the variety and

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* Now Professor of Chem. and Pharm. in the College of Pharm.

† Professor of Nat. Philos.

‡ Lecturer on Practical Mechanics.

§ On Meteorology.

‖ On Astronomy.

extent of his own accomplishments, Dr. Jones is enabled to conduct, in the name of the institution, a journal remarkably well calculated for the promotion of knowledge among mechanics, and the furtherance of the scientific reputation of the country. That journal is not only read with advantage at home, but is often, in the most flattering manner, quoted by the best scientific journals abroad. It has continued, for several years, an unwearied flight, and, as yet, has moulted no feather of its well-earned reputation. I need not fear reasonable contradiction when I say that no similar institution has sustained so long, and so well, an equal magazine.

In addition to these claims to public estimation, the Franklin Institute has conducted, and is now conducting, toilsome and very expensive experiments on some of the most important questions in practical science. With much labor, and great expense, experiments have been made on most of the requisites of water wheels and adjutages, so as to finally settle a point of great importance to every one who employs water power in the movement of machinery of any kind. The unfinished report of the committee on this subject is a master-piece of its kind.

The investigation of, and report on, weights and measures, made by the request of the House of Representitives of the State of Pennsylvania, adds a new claim, on the part of the institution, to public approbation, while the committee on steam explosions will soon put in another, of no inconsiderable weight, for an indefatigable, hazardous, and expensive series of experiments, under the patronage of the government of the United States, most ingeniously diversified. A very great deal of the labor and skill applied to these investigations has been bestowed by private members of the Institute, unpaid, and without any other motive than that of doing good to society.

I have made this exposition of the doings of the Franklin Institute, not for the vanity of the display, but for the sake of justice, and example. Our own citizens, perhaps even the members of the Institute, have not been fully aware of the extent, variety, and importance of its public services, nor acquainted with the honorabe nature of its claim to the support and countenance of our community.

It might be supposed that I had now stated all the merits of the institution; but when I look to the left, and see before me a large proportion of females, attentively engaged in receiving instruction, I cannot refrain from exulting in the prospect of great gain from their example, as well as their improvement. It has been said, and I believe most justly, that the character of the child is formed or deformed by the example and instruction of the mother. She is entrusted with the discipline of thought, at that critical period of life, when, through the flexibility of the mind, a bent is easily given to character, and the young ideas just begin to shoot. It is her care to protect the tender blossoms of thought and feeling, to prune rank luxuriancy, encourage honorable sentiment, and kindle the love of labor, and the taste for learning. She should not be found often unable to satisfy the curiosity of her child; nor should his eager thirst after knowledge be destroyed by the oft-repeated declaration of impatient ignorance. How many Newtons have been withered in the bud—how many Franklins consigned to obscurity by the presence and the influence of a mother, who, herself totally ignorant of the value of knowledge, feels no disposition to encourage in her child the love of science, or a taste for the arts!—Oh! if a mother, in *feeling*, ought she not to long to brighten in the bosom of her child, a taste, which, while it will afford him many an hour of delightful recreation, and open to him an agreeable path to honorable distinction and public usefulness, will also shield him from the thousand snares of vice set for the idle, the ignorant, and the obscure. But, more! many, very many of those who now hear me, pursue the creditable and useful profession of *teaching*, and are, like the honey-bee on his flowery embassy, abstracting the sweets of learning, to carry them home to a busy and eager school, to be again scattered far and wide for the benefit of society. This is the compound interest of learning—the field which produces a thousand fold.

Let Philadelphia, justly proud of this institution, so munificent of good, continue to carefully foster it; and let the mechanics, to whom it more especially belongs, forget not, that it is the first great step of their advancement to their proper station in society, and cherish it as at once most useful to them, and most creditable to their character.

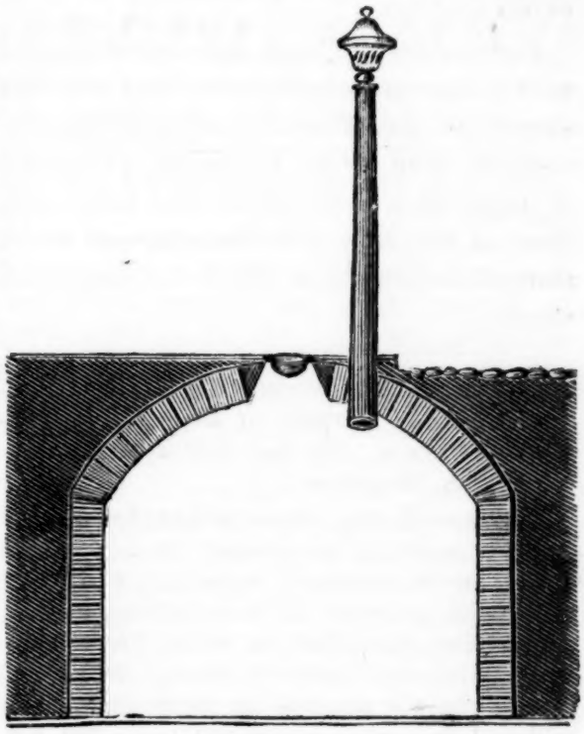
If we should, by the permission of a kind Providence, again meet in this place, you will find me prepared to extend and improve the system of instruction in my department. I have caused to be made models of buildings, and implements used in the arts, which, for want of time, I could not exhibit during the present session. In the rext course, I shall be able to present to you the interior of the glass-house, the pottery, and the iron-furnace, displayed in sectional

models, in which will be made readily comprehensible the various processes by which glass, china-ware, and iron, are produced. I have no doubt that my able colleague will make at least equal exertion to improve and extend *his* course, and that the next season will greatly exceed the last, in the value and variety of its instruction.

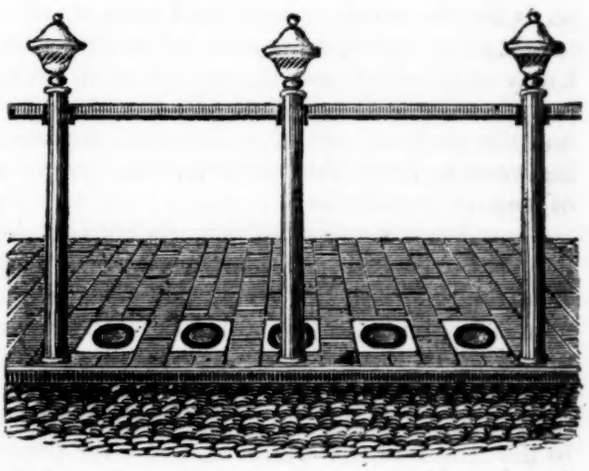
The least agreeable part of my task remains. I am now to take a final leave of you for the season. In doing so, let me not forget to thank you for the polite and quiet attention paid to my feeble endeavors to please and instruct you; for the patience with which you have borne disquisitions necessarily tedious, the respectful silence during the hour of lecture, and the avoidance, at its close, of any noisy demonstration of a satisfaction, not unknown to your teacher, but conveyed in a manner worthy of the place, of yourselves, and of the cause of science. These things console me for the toil, expense, and inconvenience, of a course, which, under the pressure of heavy professional engagements, has not been conducted in such a manner as either to benefit my purse or economise my exertion. Yet, thanks to you, I feel amply compensated for these sacrifices, by the persuasion that society is benefitted, and that you are kind enough to be satisfied with my exertions.

And now, permit me to wish you a prosperous summer, useful, agreeable, and profitable pursuits, and a return to the course of the next season, more highly prepared to receive instruction yourselves and to convey it successfully to others.

ROCKWELL'S PATENT VAULT LIGHT.—Every citizen is aware that the common vault light, or grating, which may be seen on our sidewalks at every few steps, are not only unsightly to the eye, but often positively dangerous. Very frequently they are found loose, often broken, with a bar or two out, and in winter so slippery as to render it hazardous to step upon them. Independent of these considerations, by their openness to permit rain, snow, and dirt, to pass into the vault, and render them wet, cold, and filthy, the advantages of Rockwell's Patent Light are many. There is nothing unsightly in their appearance; but, on the contrary, they are ornamental,—are made to set secure in stone, and immoveable, except when it is necessary to remove them. The passenger may put his foot on them with perfect security; and whilst they keep the vault dry, and permit ventilation to go on, possess, in addition, this advantage: they furnish, by means of the glass in the centre, light to enter, and from its convex shape, to radiate on all sides, thus giving light to the vault. Fig. 1 shows the vault, and the pipe through



which air is admitted. This pipe can be stopped up in winter if necessary, or converted into a chimney. Fig. 2 is intended



to represent the appearance outside, covering a space of 25 feet in the street.

Mr. Rockwell, the inventor, has also made these vault lights without ventilation holes, which are admirably adapted for vegetable vaults, where light only is required, thus excluding all cold and wet, but serving as win-

dows to light these hitherto dark apartments.

The durability of this light, compared with the common vault covering, will be found to bear no comparison with the difference in price, which is little more than the most common in use, independent of its superior qualities.

Persons about to build, or those who would wish to improve their vaults, may see this simple, yet beautiful and economical improvement, in front of the Exchange, where two of them have been placed over vaults,—in front of the New-York Gazette,—or at the store of the proprietor, Broadway, near John street.

Newly Invented Apparatus for Raising Vessels for the Purpose of Repair. By Rufus Porter. To the Editor of the Mechanics' Magazine.

Sir,—Having recently invented several improvements in machinery, &c. some of which are in successful operation, and being at present engaged in constructing others, and having heretofore, in several instances, been anticipated (honestly enough, however,) in applying for patents for improvements of which I had supposed myself to be the original inventor, I would give notice to the public, through the medium of your valuable Magazine, of certain inventions, supposed to be new, and of my intention to apply for patents for the same as soon as I may be able to test their utility, and ascertain what points I may safely claim as original. I shall commence with a description of an apparatus, and the mode of applying the same, for raising vessels from the water for the purpose of repair, as follows:

Four large square timbers, eighty feet in length, are placed parallel to each other, and so arranged that the space between each pair is ten feet, and the whole breadth across the four is forty feet. Across these are placed, at equal distances, seventeen other timbers, forty feet long, being firmly secured to the first four by trunnels, and over these last is laid a strong plank floor, the whole constituting a stage or platform eighty feet in length and forty in breadth. This platform rests on four square trunks, each being thirty feet long, ten feet wide, and ten feet deep. These trunks are constructed of framed timbers and planks, are closed and made tight on all sides, except an open space of ten feet in length by four in breadth, in the centre of the bottom of each; and are placed under the four corners of the platform, and between the long timbers above-mentioned, so that only the cross timbers rest on the tops of the trunks. The platform is further supported by braces extending diagonally from the sides of the trunks near the bottoms, to the middle of the cross timbers. The bottoms of the trunks are also connected by iron rods, crossing from one to another. The platform and trunks, (which, thus connected, I call an "Elevator,") being put into the water, (or rather, having been constructed afloat,) a sufficient quantity of stone is placed on the iron rods to cause the whole to sink, when filled with water. Two scows, each eighty feet long and eight feet wide, are kept in attendance, one of which floats over each side of the elevator; and ropes being attached to the four corners of the elevator, are also made fast to the bows and sterns of the two scows, thus preventing the elevator from sinking below a certain depth, say twelve feet below the surface of the water. Each scow contains, besides a small steam engine of one horse power, two hollow cylinders, similar to the cylindric boilers of high pressure engines; each cylinder being thirty feet long, and thirty inches in diameter. From each of the four cylinders, a piece of leather hose extends to one of the four trunks, being firmly attached to each. These cylinders being charged by the power of the steam engines, with fifteen atmospheres of compressed air, the vessel to be raised is floated between the scows, or if the vessel lays at anchor, the scows may be propelled by the steam power to a station on each side of the vessel, dragging the elevator with them, which is then raised by the ropes till the middle of the floor comes in contact with the keel of the vessel, and is secured in that position by several ropes or chains, which, being attached to the sides of the elevator, are made fast to the timber heads of the vessel; moreover, several chucks or blocks, previously prepared, and connected with the elevator, are placed under the bottom of the vessel, to support the same in its position when raised. Then, by means of valves, the compressed air in the cylinders is permitted to escape through the hose to the interior of the trunks, which immediately gives them a buoyancy of seven hundred thousand pounds. But if the vessel thus raised is of such a size as may not require so much power of buoyancy, the compressed air may be instantly shut off whenever the floor of the elevator shall have risen fairly above the surface of the water. While one ves-

sel is being repaired, the cylinders are again charged; and when the repairs of one are completed, other valves are opened, which permit the air to escape from the trunks, while the vessel settles readily but gently into the water, and the elevator is ready to receive another, thus avoiding the ordinary delay attendant on raising vessels by other means.

The expense of an elevator of the dimensions above specified is estimated at one thousand dollars, exclusive of the scows, cylinders, and machinery.

Yours, very respectfully,

RUFUS PORTER.

Billerica, Mass., July 30, 1834.

CHINESE IGNORANCE.—A literary Chinese, to become tolerably learned, must devote half his life to the acquisition of the words in his own language, which accounts for the general ignorance of the nation. The very costly and curious brass models of all the mechanical powers, which the French government presented to the imperial court of Pekin, were considered by the stupid, conceited great mandarins of state, as toys sent by the barbarians to amuse the emperor's grandchildren! Sir Geo. Staunton declared that the very expensive mathematical instruments manufactured by Ramsden and Dollond, conveyed to China by Lord Macartney, were as utterly useless to the Chinese as a steam engine to an Esquimaux, or a loom to a Hottentot.

INGENUITY OF THE WASP.—The following interesting paper was received, a few days since, from a gentleman of this city, whose philosophical inquiries entitle him to the respect of all minute naturalists.

While standing at my door this afternoon, my attention was attracted by a black wasp upon the back of a grasshopper, travelling at a moderate pace. The singularity of the scene induced me to examine them a little more minutely, and to endeavor to ascertain the object which the wasp had in this, to me, very singular ride. The grasshopper was of large size, the wasp's legs being barely able to reach the ground, as he sat, or rather lay, astride his back, with the grasshopper's antennæ in his mouth, and, as it were, for a bridle. The hind legs of the grasshopper were the principal locomotive powers employed, assisted, however, by the legs of the wasp, and excited by his sting, which was vigorously employed, especially when any obstacle fell in their path, at which time the wings of the wasp were also set in motion. The distance travelled in this manner was about thirty feet, and the time employed about three quarters of an hour. The wasp then stopped, and dismounting, commenced running in various directions, four or five minutes, when he again stopped, and, after removing some earth, entered a hole which had been previously excavated in the earth, and eagerly set about enlarging it, bringing out, at each time he entered, with his fore-legs and head, pieces about one-third the size of his body, stopping only to remove the earth as it accumulated at the entrance. After having been engaged in this manner for a little time, he returned to the grasshopper, (about three feet distance,) pursuing a circuitous route as before. Previous to this, the grasshopper not moving, I took him in my hand and examined him, but could discover no signs of life. My curiosity was consequently much excited, to know what means the wasp would take to get him to the tenement which evidently was being prepared for his reception. I was much surprised, therefore, when I saw the wasp remount, and ride on towards the hole, the legs of the grasshopper still assisting as before. Upon his arrival there, the wasp dismounted, and having several times walked over the grasshopper, commenced again enlarging the hole. This was several times repeated, probably for the purpose of ascertaining the necessary dimensions of his receptacle, which having been completed, he remounted, and rode to the entrance, dispensing, however, at this time, with the legs of the grasshopper, probably on account of the shortness of the distance, it being only five or six inches. He next entered the hole, leaving the grasshopper at the mouth of it, and, after turning, seized upon his antennæ, and dragged him in after him, which being done, he closed the entrance with earth—not with the same which he had before removed, but with a portion near by, perhaps at the same time commencing a similar excavation, for a similar purpose. The covering being completed, he flew away, having been on his legs for near an hour and a half, commencing from the time when I first observed him.

Perhaps the most singular part of this adventure is, that the grasshopper should remain still, after the wasp had left him. I can only account for it by supposing him to have been nearly dead, and only capable of moving his legs under the influence of uncommon excitement. This, as I said before, was furnished by the sting of the wasp. It is also singular that the wasp should take a circuitous course, when proceeding to and from the hole. This I supposed, at first, to

be done to prevent his footsteps being followed by other insects, and his deposit discovered, but this does not appear to have been the object, for when going with his prey his course was direct. I had forgotten to mention that he did not immediately fly, after having completed his work, but first ran about in every direction, for a considerable time, apparently for no purpose.—[Scientific Tracts.]

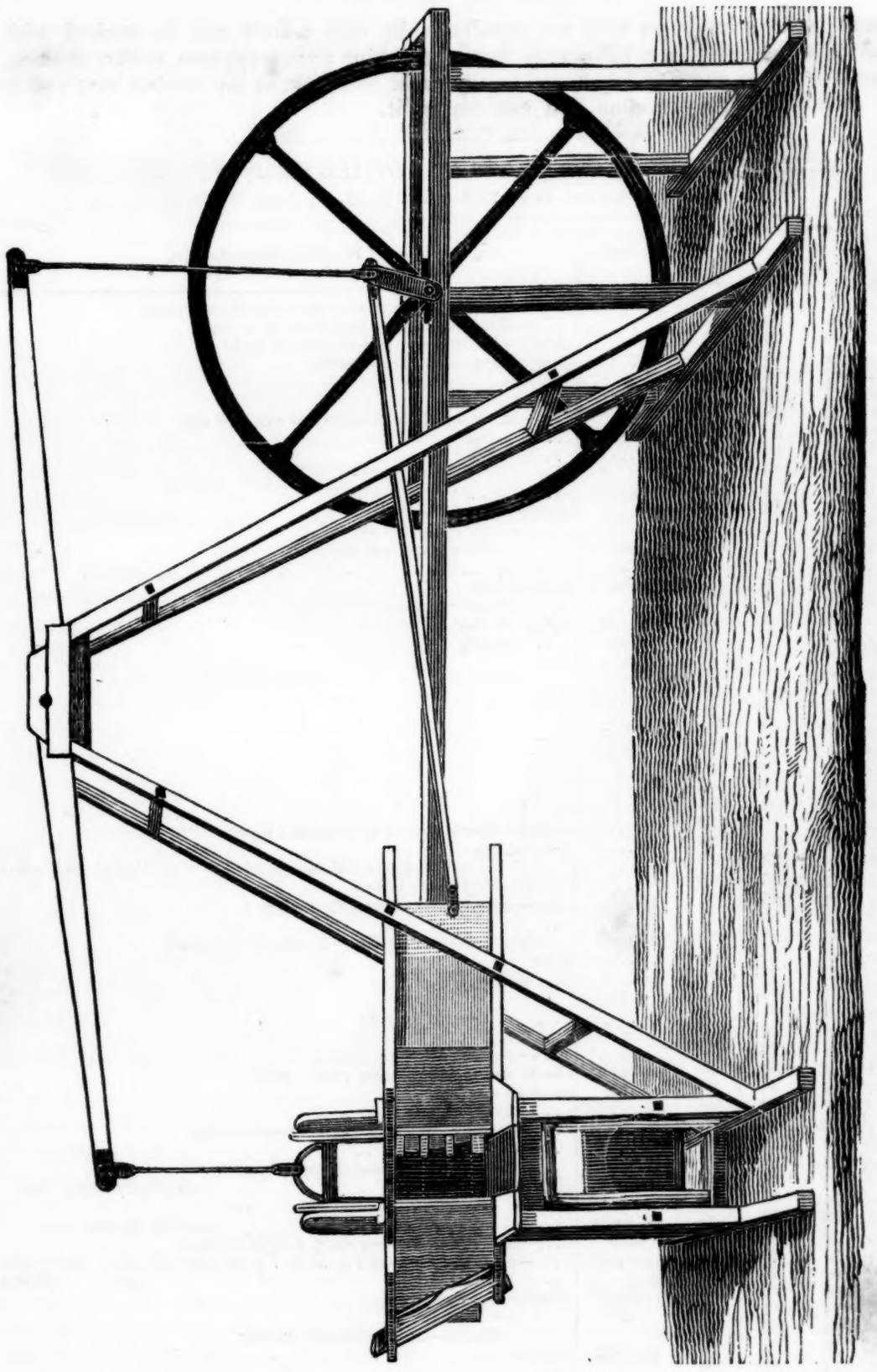
Lectures on Phrenology. Delivered before the Young Men's Association for Mutual Improvement, of the City of Albany. By Amos Dean. Oliver Steele, and Hoffman & White, 1834. 12mo. pp. 252.

Another book on Phrenology. "Will the line stretch out to the crack of doom?" Are the crooks and crannies of our skull to be spied out, and a book made thereon, and our bumps not even let alone? We must e'en get a wig made of porcupine quills, like our brother editor of the Lowell Bulletin. Had Shakspeare been a phrenologist, Hamlet would not then have apostrophized the skulls, when the grave of Ophelia was being dug, by supposing them to have belonged to a politician, which the ass then o'er-reached, a courtier, a lord, and a lawyer, whose fine pate was full of fine dirt, and who, with all his quidits, quillets, cases, tenures, and causes, suffered the rude knave to knock him about the sconce with a dirty shovel, and not tell him of his action of battery; and whose vouchers would vouch him no more of his purchases than the length and breadth of a pair of indentures. But, instead, we should have had as full, true, and particular account of their virtues and vices, the number and varieties of their bumps, as are described of the bust of Homer: even our author, with all his classical attainments, states that it has the organ of ideality extraordinarily developed, when no trace of his bones or country has ever yet been discovered; and some have even doubted of his existence, or of the siege of Troy, particularly J. B. S. Merritt, in his able pamphlet on that subject, published some time since. Well might the sly wag of Blackwood's Magazine get up the humorous story of the Turnip, mistaken for the skull of Plato by the lecturer on Phrenology at Edinburgh. However, badinage apart: the book before us is ably written, and the language abounds in lofty flights of eloquence, such as would adorn and grace any subject, as well as tempt us to believe the wrong was right, like the language of Milton's Satan when tempting Eve; but the stern school of philosophy needs not its path to be strewed with flowers, however beautiful they may be. Truth, when unadorned, shines brightest and fairest by its own true light; the foreign aid of ornament tends but to conceal the defects and hide the beauties.

The author, in his preface, adverts to a difference between Dr. Spurzheim and Mr. Coombe, in the numbering of the organs. When men like these, (whose whole lives have been devoted to the subject,) differ, we begin to doubt their theory: a house divided against itself cannot stand; and we feel "There's something rotten in the state of Denmark."

We can never reconcile ourselves to their creed, and which is the false position of the fatalist, alike injurious to the Christian and the citizen—the subverter of all religion and law. Yet with its poison it carries an antidote, and causes a deeper research into human nature, by the study of the brain and the skull. Hence Sir Charles Bell's able experiments on the Nervous System, one of whose results is rather against the system of Phrenology. "That the first part of the fœtus' nervous system is the spinal marrow, the upper part of which is first enlarged, and then the brain succeeds, making the brain the secondary, and not the primary, as the phrenologists do." Again, there are only nine pair of nerves proceeding from the brain, whilst there are thirty-one from the spinal marrow. The brain may be cut away or removed, without affecting the power of voluntary motion or giving pain, thereby contradicting Shakspeare, "That when the brains were out the man would die." If, therefore, the brain can be removed from the skull, what becomes of the bumps? Does the skull remodel itself according to the quantum of brain removed? How is it that the half-reasoning elephant has so small a quantity of brain contained in so large a head? But if we proceed to questions, we shall ask, and tire with asking: each answer will provoke fresh questions, and the line, (as we stated in the beginning,) "would stretch out to the crack of doom;" and we will therefore end our critique by earnestly recommending a perusal of the work under review; it will give rise to much deep research by the scholar, and will repay every class of readers bythe beauty and eloquence of its style, and the philosophical manner in which the subject is treated, though the flowers are rather too thickly strewed. This will, however, be no fault in the eyes of the fairest part of the creation, who wish to learn the heady subject of the theory of bumps, whether belonging to lover or husband.

T.



Flagg's Shingle Machine, for riving and shaving Shingles at one Operation. [Communicated by the Inventor.]

The above plate represents the Shingle Machine invented and patented by DAVID FLAGG, Jr., of the city and county of New-York, which can be seen at 104 Beekman street. It is one of the greatest labor saving machines in this country; it performs its work to great perfection, and at a rate almost incredible to all who have not seen it. It is very simple in its construction, and not liable to get out of order. By this machine sixty shingles are made from the bolt or block in one minute, being one a second, and more perfect than can be made with a

frow and drawing knife, as they are usually made. The shingles are of a true taper from butt to point, and can be shaved to any given thickness. Any timber that can be split with a frow can be worked with this machine: pine, cypress, cedar, chesnut, oak, ash, hemlock, or any timber that will rive or split.

METEOROLOGICAL RECORD, KEPT AT AVOYLLE FERRY, RED RIVER, LOU.

For the months of May and June, 1834—(*Lat.* 31.10 *N.*, *Long.* 91.59 *W. nearly.*)

Date. 1834.	*Thermometer.* Morn'g.	Noon.	Night.	*Wind.*	*Weather, Remarks, &c.*
May 1	72	81	80	S	clear—thunder and rain, evening—Red River rising
" 2	70	79	68	..	.. —cloudy morning—Red River at a stand
" 3	69	76	74	..	cloudy—hail and rain and thunder at night
" 4	74	84	76	..	clear all day—Red River falling
" 5	62	76	74	W	..
" 6	67	75	72	NW	..
" 7	52	68	62	W	.. —at 1 p. m. thunder showers, rain and hail
" 8	50	62	72	high	..
" 9	58	81	68	..	..
" 10	64	85	78	..	..
" 11	62	78	76	calm	.. ..
" 12	64	82	76	..	cloudy
" 13	66	82	70	..	.. —rain in the evening
" 14	60	62	62	NE	.. —rain all day and night
" 15	60	64	62	..	.. — .. .. ..
" 16	62	72	72	calm	clear all day
" 17	60	78	75	..	.. —cloudy at noon—wind, NE
" 18	64	78	72	SE—high	cloudy all day
" 19	67	72	70	calm	.. —rain
" 20	68	76	71	SE	..
" 21	66	78	79	..	..
" 22	68	82	77	calm	clear
" 23	68	83	78	..	..
" 24	66	84	78	N—light	..
" 25	67	84	79	calm	..
" 26	69	85	82	..	..
" 27	70	86	82	..	..
" 28	72	88	84	..	..
" 29	70	78	68	..	cloudy—heavy rain in evening and night
" 30	66	76	76	..	clear all day [8 ft. 7 in.
" 31	68	78	88	..	.. .. —Red River fell this month 4 ft. 8 in.—below high water mark,
June 1	74	86	82	..	cloudy—Red River falling
" 2	74	86	84	..	clear—saved first crop red clover hay
" 3	74	88	84	..	..
" 4	76	86	84	S—light	cloudy morning—clear day—digging Irish potatoes
" 5	77	88	84	..	clear
" 6	73	90	83	..	.. all day
" 7	72	89	84	calm	.. ..
" 8	73	87	92	..	.. .. —cutting oats
" 9	72	86	82	S	.. ..
" 10	72	90	83	SW	.. —evening calm and cloudy
" 11	74	88	82	W—light	cloudy morning—evening clear—wind N
" 12	68	86	80	calm	clear all day
" 13	70	90	84	SW—light	.. —flying clouds
" 14	71	90	82	..	.. —evening, distant thunder—tomatoes ripe
" 15	70	88	82	..	.. — .. ..
" 16	73	83	76	S	.. —evening, cloudy and distant thunder
" 17	73	82	74	calm	cloudy— .. .. .. —finished cutting oats
" 18	74	84	78	..	clear— .. .. ..
" 19	70	89	82	N—light	.. — .. .. .. —ochre for use
" 20	72	88	80	calm	.. —foggy morning—evening, a light shower
" 21	70	80	69	NE—high	.. —clear evening—at 1 p. m. to 7 p. m. a severe gale & heavy rain—corn
" 22	70	88	80	..	.. [blown down
" 23	76	88	82	S—light	cloudy—light shower
" 24	74	81	76	S	.. — .. ..
" 25	74	86	74	..	.. evening—heavy thunder shower
" 26	72	89	84	S—light	clear— .. .. ..
" 27	74	89	84	..	..
" 28	74	88	82	..	..
" 29	72	88	82	..	.. [water mark, 17 ft. 1 in.
" 30	75	90	—	..	.. —evening rain—Red River fell this month, 8 ft. 6 in.—now below high

P. S.—The storm on the 21st of June injured our crops of corn very much.

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